

stimulating hormones might promote and accelerate root formation from the exposed endosperm. Do you think this idea is worthwhile? Try it and see.

PHIL SHERIDAN (5729 S. 2nd St., Arlington, VA 22204) writes: I was with a group of biologists from George Mason University and we were mapping a forested area on Andros Island in the Bahamas. In the first two weeks of January 1984, we had several opportunities to visit some inland fresh water blue holes. Two types of *Utricularia* were found: *U. purpurea* and *U. gibba*. These blue holes vary in size but they go straight down for about 300 feet! The diameter on one was about 150 ft. The *Utricularia* were found growing on the edges of the blue holes intermingled with some kind of algal masses. Interestingly, the soil here is limestone and the edges of the blue holes were pure limestone, so I imagine the water is alkaline.

While we were in the Bahamas, we camped on the beach near Fortar Biological Research Station. On an adjoining road between the station and our camp, a small colony of *Pinguicula pumila* was found by our botanist, Dr. Bradley. This colony was the only site for this plant. Basically, Andros

Island is very similar to southern Florida. Also, Dr. Bradley mentioned that G.R. Proctor introduced pitcher plants to a sphagnum bog in Jamaica about ten years ago and the plants were doing very well. This location was near a biology field station. Additional plants there were flytraps, sundews as well as the pitcher plants. Also, *D. capillaris* was found there and although it is very rare, it is a true native.

Here in Virginia our club is basically a loose group of four individuals. There is John Hummer, Jim Darlyk, Dave Butler and myself. John and I frequently get together since we only live a mile or two apart. Jim is a recent addition to our group, but is very enthusiastic about the plants. Dave joins me once in a while for a trip to New Jersey or the Carolinas. We all grow a lot of *Sarracenia* with a good representation of *Nepenthes* and *Drosera*. I'm always headed out looking for CP and I usually manage to drag somebody along once in a while. I have a good friend near Richmond, Bill Schull, who has joined me on many trips in Virginia and elsewhere. Bill has been collecting the plants for about the past seven years and has a nice collection of *Sarracenia*, *Dionaea* and *Drosera*.

CP BOG AT THE FULLERTON ARBORETUM

by Leo C. Song, Jr.

INTRODUCTION

Carnivorous plants (CP) have fascinated people for generations and it has been a challenge for botanic gardens and arboreta to successfully exhibit them. Since these plants are strange and not well known, they fall prey to casual (random) and intentional theft. Botanic gardens the author has visited have CP behind glass barriers or in glass cases (Kew and Paris), especially where the plants are small. This puts a physical limit on the larger plants, such as *Sarracenia*. During the early planning stages of the Fullerton Arboretum, it was decided to create an artificial bog where CP could be exhibited in a totally open area.

The Fullerton Arboretum, located in the northeast quadrant of the campus of California State University, Fullerton is in the middle of a formerly productive area of citrus and avocado. The climate is of the Mediterranean type (warm dry summers, cool wet winters). Not considering water, the climate is favorable for most CP, especially *Sarracenia*. Humidity during the *Sarracenia* growing season is not as high as that in their native areas, but with sufficient water available, there has not been any problem growing them under lath.

Water quality is a problem. A source of high quality (low mineral content, especially low sodium, calcium and magnesium) water

had to be found. This was solved by a pressurized reverse osmosis system with a production capacity of about 1,500 gallons a day. Since the system also produces "waste" water, which is about 10% higher in total dissolved solids (TDS), a use had to be found for it. Rather than dump it down a drain, it was allowed to run into the recirculating water system partially compensating for water loss through evaporation and leakage.

CONSTRUCTION

The bog is located beside the upper lake, but at a higher level. This was to avoid the poorer quality water from the lake from filtering into the bog. To imitate the natural conditions, the bog is not kept full of water, but is allowed to partially dry out between waterings. This serves several purposes. One is that oxygen is pulled into the soil as the water level drops. Also *Sarracenia* should not be constantly waterlogged. Since the soil is not constantly wet, algae and snails are not a problem. These were introduced by water birds and were a problem when the bog was constantly full of water.

The type of lining used was clay soil that was compacted in a layer about 2 to 3 feet

JOE MAZRIMAS would like to report the results of the San Francisco County Flower Show in August, 1984. It turned out to be a crowd pleaser to thousands of people because of the fantastic display of CP situated on a wall of sphagnum moss bisected with a waterfall. There were 51 entries brought in by 7 exhibitors. The exhibitors were: Louise Avila, Ray Triplitt, George Rea, Larry Logoteta, Glenn Greenawalt, Mickey Urdea and Joe Mazrimas. Louise Avila won best of show with a splendid *Nepenthes truncata* plant. Another rare plant was *N. hamatus* grown by Ray Triplitt which clearly showed the clawed peristome. (See photos, right)

Those of us who like to grow some of our CP in living sphagnum moss may order it for \$6.70 for a 3½ cu. ft. bale. Ask for the bale to be shipped in a plastic bag to preserve moisture. Shipped to California, it costs \$6.00 by UPS. The address: Mosserlee Co., P.O. Box 437, Millston, WI 54643. Phone: (715) 284-2296.

thick. Slow percolation will prevent anaerobic conditions from occurring at the lower levels of the soil and would closely



View of excavation for CP bog at the Fullerton Arboretum in September, 1979. The white pipe is the inlet for the RO water. Photo by L. Song.



N. truncata, grown by L. Avila.
Photo by Joe Mazrimas.



N. hamatus, grown by R. Triplett.
Photo by Joe Mazrimas.



View of bog from SE corner. *S. alata* × *S. purpurea venosa*, a very red cross, is in the foreground, with *S. alata* to the rear. Right of center is a large clump of *S. alata* × *S. leucophylla*. Creeping sedge, used as a ground cover and soil stabilizer, resembles a green carpet.

Photo by L. Song.

approximate natural conditions.

A soil mix of washed plaster sand and peat moss in equal proportions was used as the fill. This was topped off with an equal mixture of peat moss and silica sand. The bog was filled with water and allowed to stand for a few months, giving the soil time to settle and age.

PLANTING

The first planting was made spring, 1978 and consisted of *Sarracenia alata*, *S. leucophylla*, *S. flava*, *Sarracenia* hybrids, *Dionaea muscipula*, and *Drosera* × 'California Sunset'. A problem was encountered almost immediately. Waterbirds began to pull the plants out as well as destroying the pitchers to get the trapped insects. Weeds, such as cattails and sedges, began to grow. These were removed by hand. To stabilize the soil, a species of creeping sedge was introduced via seed and clumps. Within two years, the entire surface was covered. Due to persistently high water levels in the summer of 1979, many of the original plants died. It was also decided to construct a shade structure over the bog. Shade cloth of 55% was used.

As clones of *Sarracenia* were divided in the Biology Department's CP collection, extra material was planted in the bog. Planting them was a simple matter of cutting through the sedge mat, digging a small trench, placing the clump with roots extended and replacing the mat. Most of the planting was done during the winter to early spring so that they would be in place when growth started. Within two years after planting out, most *Sarracenia* regain and even surpass their original potted size.

Occasional losses occur due to rot, but for the majority of the plants, few diseases have affected them. Thrips are treated with Diazinon (R)* or Cygon (R)* while the water level is below the overflow drain level to avoid pesticide contamination of the lake system.

During 1984, *Drosera* × 'California Sunset' was introduced. It has generally failed to thrive. *Dionaea* has not survived for more than a year. Further introductions are planned, especially with the new watering schedule. Other species of *Drosera* will be

tried as they become available. Additional "fine tuning" will include more plantings of *Sarracenia* F-1 hybrids and species.



View of bog from north, *S. flava* in the foreground and F2's of *S. flava* × *S. leucophylla* just beyond. In background are F2's of *S. rubra gulfensis* × *S. leucophylla*.

Photo by L. Song.

ICPS DIRECTORY

The ICPS directory on the following pages of this issue includes members who were in the society in 1983 and 1984. The alphabetical listing begins on page 95 and the geographical listing on page 108. The editors would like to remind everyone that the directory is intended for the personal use of society members and is *not to be used for commercial purposes*.